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10/823,241	04/12/2004	Susan Gaye Elkington	200401303-1	4068

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EXAMINER	
NAM, HYUN	
ART UNIT	**PAPER NUMBER**
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/823,241	ELKINGTON ET AL.	
	Examiner	Art Unit	
	Hyun Nam	2184	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *01 June 2007*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) 1-21 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-21* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claim Objections

Claims 19-21 objected to because of the following informality:

In claim 19, line 5, "the controller" should be --a controller--

Appropriate correction is required.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-6 and 15-20 are rejected under 35 U.S.C. 102(b) as being anticipated by the Dandrea et al. (U.S. Application Publication 2002/0013864), herein after referred to as Dandrea '864, the particulars of which are further described by Bleidt et al. (U.S. Patent 5,671,377), herein after referred to as Bleidt '377 (see Dandrea '864, Paragraph 28, Line 7; Bleidt '377 is incorporated by reference in Dandrea '864).

Referring to claim 1, Dandrea '864 teaches a method of managing resource usage (see Abstract, Lines 1 and 2) comprising:

queuing accesses (see Paragraph 30, Lines 2-3, 6-8, and 12-14) of at least one associated resource (see Fig. 2, Hard Disks 120s; An array of disk storage is one of the resource in this Video Server system) in at least one respective resource queue (see Fig. 2, Statistical Disk Scheduler (SDS) Queues 200s and Internal Disk Queues 125s; Three types of SDS Queues are Stead-State Queue (SSQ) 221s, New Subscriber Queues (NSQ) 222s, and Other Request Queues (ORQ) 223s);

monitoring queue depth (see Fig. 5, Steps 560 and 570; A Step 560 checks to see if Internal Disk Queues are Full and a Step 570 checks to see if all of the 3 Queues in SDS is empty) in the at least one resource queue (SSQ, NSQ, ORQ, and Internal Disk Queues are all associated with Hard Disk resource) and for a predetermined level of resource consumption (see Fig. 5, Steps 560 and 570);

preventing issue of subsequent commands (see Fig. 5, Step 300; When Internal Disk Queue is not Full and three of SDS Queues are not Empty then SDS Selection sub-routine is called in Fig. 3; see Fig. 3, Steps 315 and 325; If accepting new request keeps from existing request(s) to miss the deadline(s) then the new request will be discarded which prevent its access to the Disks) from a client (see Fig.1, Subscribers 160s) to a server (see Fig. 1, Video Server 110) in a client/server combination (Subscriber/Video Server) in response to a command (see Fig. 5, Step 520; The SSQ handles Steady-State Request or command) of the client/server combination that increases resource consumption to the predetermined level (Note, subscribers requesting services from the video server will increase resource consumption to the level stated above);

queuing an identifier (see Fig. 1, Subscribers 160s; It is inherent that this Video Server keeps track of each subscribers in the SDS Queues (see Bleidt '377, Fig. 9, Step 904 for the further evidence)) of the client/server combination on a waiting queue (see Fig. 5, Step 520; The SSQ is holding queue for the Steady-State Request by the Subscribers);

removing the client/server combination identifier from the waiting queue (see Fig. 3, Steps 360 and 370; The request S is removed from SSQ) in a queuing order (see Fig. 5, Step 530; The SSQ ordered by the time deadline) as resource consumption declines (see Fig. 5, Step 560 and 570; When Internal Disk Queue is not full and all SDS Queues are empty then the demand on the resource has declined); and

re-enabling issue of commands (see Fig. 3, Steps 340 and 370; NSQ holds New Subscriber Request such as request to rewind or replay of videos) from the client to the server in the client/server combination.

With respect to claim 2, Dandrea '864 teaches the method according to Claim 1 further comprising: managing resource usage for clients that require a specific resource (see Fig. 1, Hard Disks 120).

With respect to claim 3, Dandrea '864 teaches the method according to Claim 1 further comprising: enabling issue of commands (see Fig. 3, Step 390; A request from SDS queues has been forwarded to Internal Disk Queues so that video stream can be

provided) of a client/server combination in order of queuing (see Paragraph 8, Lines 6 and 7) as resource availability is restored (see Paragraph 44, Lines 2-4).

With respect to claim 4, Dandrea '864 teaches the method according to Claim 1 further comprising:

receiving a command (see Fig. 5, Step 520; A Steady-State Request from the Subscriber) from a client (see Fig.1 Subscribers 160s) to a server (see Fig. 1 Video Server 110) that increases consumption (A Steady-State Request is made to consume video data stream) of a resource (see Fig. 1, Hard Disks 120s) to a predetermined resource consumption condition (Note, subscribers requesting services from the video server will increase resource consumption to the level stated above);

setting a flag (see Fig. 5, Step 580; A SELECT flag set to TRUE after performing Step 300 from Fig. 3) indicative of the predetermined resource condition (A selection procedure for Disks are indicative of the predetermined resource condition);

allowing the command to complete (see Fig. 3, Step 390); and

rejecting subsequent commands issued by the client to the server (see Fig. 3, Step 325).

With respect to claim 5, Dandrea '864 teaches the method according to Claim 1 further comprising:

detecting an increase (see Fig. 5, Step 560; Checking to see if Internal Disk Queue is full detects an increase) in consumption of a resource (see Fig. 1 Hard Disks

120s) to a level above a preselected limit (see Fig. 5 Step 560; Determination of what amount of request in the queue is Full condition is the pre-selected limit); and

queuing an identifier (see Fig. 1, Subscribers 160s; It is inherent that this Video Server keeps track of each subscribers in the SDS Queues (see Bleidt '377, Fig. 9, Step 904 for the further evidence)) of the client/server combination on a waiting queue (see Fig. 5, Step 520; The SSQ is holding queue for the Steady-State Request by the Subscribers) associated with the resource.

With respect to claim 6, Dandrea '864 teaches the method according to Claim 5 further comprising:

detecting a decline in consumption of the resource (see Fig. 5, Steps 560 and 570; When Internal Disk Queue is not full and all SDS Queues are empty then the demand on the resource has declined);

removing (see Fig. 3, Steps 360 and 370) a client/server combination identifier (see Fig. 1 Subscribers 160s; It is inherent that this Video Server keeps track of each subscribers in the SDS Queues (see Bleidt '377, Fig. 9, Step 904 for the further evidence)) from the waiting queue (see Fig. 3, Step 360; SSQ holds Steady-State Requests) in the queue order (see Fig. 4, Step 530); and

enabling (see Fig. 3, Step 390) subsequent commands of the client/server combination removed from the waiting queue for operation.

Refereeing to claim 15, Dandrea '864 teaches a data handling system comprising:

at least one controller (see Fig. 1, Statistical Disk Scheduler) controlling data transfers (see Paragraph 26, Lines 7-9) between at least one client (see Fig. 1, Hard Disks 120 and Subscribers 160s) and at least one server (see Fig. 1 Video Server 110);

at least one resource (see Fig. 1, Hard Disks 120) utilized in the data transfers;

at least one resource queue (see Fig. 2, SDS Queues 200s and Internal Disk Queues 125s) respectively associated with the at least one resource that queues accesses to the associated resource (see Fig. 2, Data Path 251s, 252s, and 253s); and

a logic (see Fig. 5) that monitors (see Fig. 5, Step 560) the at least one resource queue (see Fig. 5 Step 560; Internal Disk Queue is a resource) for a predetermined resource consumption condition (see Fig. 5, Step 560; Note, Disk Queue Full condition), identifies a source (see Fig. 1, Subscribers 160s) that issues commands (see Fig. 5, Step 520; Note, a subscriber requesting a video service) to a client (see Fig. 5, Step 530; Note, a set of disks that has video data) in a source/client combination associated with a command that contributes to the predetermined resource consumption condition (see Fig. 3, Step 390; Note, any request to Disk contributes to resource consumption), queues the identified source/client combination on a waiting queue (see Fig. 5, Steps 520 and 530; Note, it is inherent that subscribers are identified in each of the SSQs), and prevents subsequent issue of commands of the identified source/client combination (see Fig. 3, Step 325).

With respect to claim 16, Dandrea '864 teaches the system according to Claim 15 further comprising:

a logic (see Fig. 5) that detects receipt of a command (see Fig. 5, Step 520; Note, a subscriber requesting a video service) from a client (see Fig. 1, Subscribers 160s) to a server (see Fig. 1, Video Server) that increases consumption of a resource above a preselected limit (see Fig. 5, Step 560), sets a flag (see Fig. 5, Step 580) indicative of a predefined condition of the resource (see Fig. 5, Step 560; Note, Disk Queue Full condition), allows the received command to complete (see Fig. 3, Step 390), and rejects subsequent commands issued by the client to the server (see Fig. 3, Step 325).

With respect to claim 17, Dandrea '864 teaches the system according to Claim 15 further comprising:

a logic (see Fig. 5) that detects an increase in consumption of a resource above the preselected limit (see Fig. 5, Step 560), queues an identifier (see Fig. 1, Subscribers 160s; It is inherent that this Video Server keeps track of each subscribers in the SDS Queues (see Bleidt '377, Fig. 9, Step 904 for the further evidence)) of the client/server combination on a waiting queue (see Fig. 5, Step 520; The SSQ is holding queue for the Steady-State Request by the Subscribers) associated with the resource.

With respect to claim 18, Dandrea '864 teaches the system according to Claim 17 further comprising:

a logic (see Fig. 5) that detects a decline in consumption of the resource (see Fig. 5, Step 560), removes a client/server combination identifier (see Fig. 1, Subscribers 160s; It is inherent that this Video Server keeps track of each subscribers in the SDS Queues (see Bleidt '377, Fig. 9, Step 904 for the further evidence)) from the waiting queue (see Fig. 5, Step 520; The SSQ is holding queue for the Steady-State Request by the Subscribers) in the queue order (see Fig. 5 Step 530; Note, ordered by the time deadline), and enables subsequent commands of the client/server combination (see Fig. 3, Step 390) removed from the waiting queue (see Fig. 3, Step 370) for operation.

Referring to claim 19, Dandrea '864 teaches an article of manufacture comprising:

a tangible processor usable medium (see Fig. 1, Memory 117) having a readable program code (see Figures 3-7; and Paragraph 40; These flow chart represents program codes) embodied therein for managing resource (see Fig. 1, Disks 120) usage, the readable program code further comprising:

a code (see Fig. 5, Step 520) causing the controller (see Fig. 1, Statistical Disk Scheduler 170) to queue accesses of at least one associated resource (see Fig. 1, Disks 120) in at least one respective resource queue (see Fig. 5, Step 520; Steady State Requests of streaming video from Disks 120 by Subscribers are added to Steady-State-Queues);

a code (see Fig. 5, Step 560) causing the controller to monitor for a predefined level of resource consumption (see Fig. 5, Step 560; This step monitors if Disk Queues are already full with Subscribers requests) ;

a code (see Fig. 5, Step 300; and Fig. 3, Step 325) causing the controller to prevent issue of subsequent commands (see Fig. 3, Step 325; Discarding a request from the queue prevents user request to access video streams from the disks) from a client (see Fig. 1, Subscribers 160s) to a server (see Fig. 1, Video Server 110) in a client/server combination (Subscribers/Video Server) in response to a command (see Paragraph 30, Lines 2-5; Steady State Request of streaming video) of client/server combination that increases resource consumption to the predefined level (see Fig. 5, Step 560; The predefined level is when Disk Queue is full of requests).

a code (see Fig. 5, Step 520) causing the controller to queue an identifier (see Paragraph 30, Lines 2-5; a Steady-State Subscriber Queue (SSQ) identifies subscribers in the queue who is requesting streaming video) of the client/server combination on a waiting queue (see Fig. 5, Step 520; The SSQ is a waiting queue for the corresponding Disk queues);

a code (see Fig. 3, Step 370) causing the controller to remove the client/server combination identifier from the waiting queue (see Fig. 3, Steps 370 and 390; A request in SSQ of SSD will be forwarded to the Disk Queue) in a queuing order (see Fig. 5, Step 530; All Disk's SSQs are ordered by the Time Deadline) as resource consumption declines (It is inherent as request is being served future data transfer requirement declines); and

a code (see Fig. 3, Step 390) causing the controller to enable issue of commands from the client to the server in the client/server combination (see Fig. 3, Step 390; When a request made by the subscriber is the Disk Queue, the subscriber is watching the video or data transfer command has been enabled).

With respect to claim 20, Dandrea '864 teaches the article of manufacture according to Claim 19 further comprising:

a code (see Fig. 5) causing the controller (see Fig. 1, Statistical Disk Scheduler 170) to manage resource (see Fig. 1, Distribution Manager 180) usage for clients (see Fig. 1, Subscribers 160s) that require a specific resource (see Fig. 1, Disks 120);

a code (see Fig. 5) causing the controller to receive a command (see Fig. 5, Step 520) from a client (see Paragraph 30, Lines 1-3) to a server (see Fig. 1, Video Server) that increases consumption (see Fig. 5, Step 520) of a resource (see Fig. 5, Step 560) above a preselected limit (see Fig. 5, Step 560; When new request is made and the Disk Queue is Full);

a code (see Fig. 5) causing the controller to set a flag (see Fig. 5, Step 540) indicative of a condition (see Fig. 5, Step 530; and Paragraph 30, Lines 5 and 6) of the resource;

a code (see Fig. 3) causing the controller to allow the command to complete (see Fig. 3, Step 390); and

a code (see Fig. 3) capable of causing the controller to reject subsequent commands (see Fig. 3, Step 325) issued by the client to the server.

With respect to claim 21, Dandrea '864 teaches the article of manufacture according to Claim 19 further comprising:

a code (see Fig. 5) causing the controller (see Fig. 1, Statistical Disk Scheduler 170) to detect an increase in consumption (see Fig. 5, Step 560) of a resource (see Fig. 1, Disks 120) above a preselected limit (see Fig. 5, Step 560; A pre-selected limit is when Queue is full);

a code (see Fig. 5) causing the controller to queue an identifier (see Paragraph 30, Lines 2-5; A Steady-State Subscriber Queue (SSQ) identifies subscribers in the queue who is requesting streaming video from Video Server) of the client/server combination (Subscribers/Video Server) on a waiting queue (SSQ) associated with the resource;

a code (see Fig. 5) causing the controller to detect a decline (see Fig. 5, Steps 560 and 570; There is a decline in video service request when Disk Queues are not full and SDS queues are empty.) in consumption of the resource;

a code (see Fig. 3) causing the controller to remove a client/server combination identifier (see Fig. 3, Step 370) from the waiting queue in the queue order (see Fig. 5, Step 430); and

a code (see Fig. 3) causing the controller to enable subsequent commands of the client/server combination (see Fig. 3, Step 390) removed from the waiting queue for operation.

Claims 8-14 are rejected under 35 U.S.C. 102(b) as being anticipated by the Krakirian (U.S. Patent 5,603,066), herein after referred to as Krakirian '066.

Referring to claim 8, Krakirian '066 teaches a storage system (see Fig. 3) comprising:

at least one storage controller (see Fig. 3, Disk Controller 212) controlling data transfers (see Fig. 3, Read Channel 210 and SCSI Bus 203) between at least one host adapter (see Fig. 3, SCSI Interface 211) and at least one storage array configured as physical storage (see Fig. 3, Disk 208) and logical storage (see Fig. 10B, LBA indexes at CFIFO6-8), the logical storage being arranged in logical units (see Fig. 10B, CLUN index at CFIFO4);

at least one resource utilized in the data transfers (see Fig. 3, Disk 208);

at least one resource queue (see Fig. 4, CFIFO 217) respectively associated with the at least one resource (see Fig. 3, Hard Disk 208) and that queues accesses to the associated resource (see Fig. 10B, CLUN index at CFIFO4); and

a logic (see Fig. 7A) that monitors the at least one resource queue (see Fig. 7A-1, Step with 'Is Queue Full (QFULL=1)?') for a predetermined resource consumption condition (see Fig. 7A-1, Step with 'QFULL=1'), identifies an and adapter (see Fig. 7A, RCV_IDTAG) that issues commands to a LUN (see Fig. 10B, CLUN index at CFIFO4) in an adapter/LUN combination associated with a command that contributes to the predetermined resource consumption condition (see Fig. 7A-1, Step with RCV_CMD), queues the identified adapter/LUN combination on a waiting queue (see Fig. 7A-1, Step

with RCV_IDTAG), and prevents issue of subsequent commands of the identified adapter/LUN combination (see Fig. 7A-1, Step STOP).

With respect to claim 9, Krakirian '066 teaches the storage system according to Claim 8 further comprising:

a logic (see Fig. 7B-1) that detects a decline in resource consumption (see Fig. 7B-1, Step with 'Is Transfer Done (XDONE=1)?'), dequeues (see Fig. 4, CFIFO; Note, the nature of First-In-First-Out queue is to de-queue first queue item first) the adapter/LUN combination identifier from the waiting queue (see Fig. 4, CFIFO 217), and re-enables commands of the dequeued adapter/LUN combination (see Column 7, Lines 61-63; Note, when command leaves the CFIFO, operation on the Disc is taking place) for operation.

With respect to claim 10, Krakirian '066 teaches the storage system according to Claim 8 further comprising:

at least one resource selected from a group consisting of dynamic caching structures (see Fig. 4, SCSI Host Sequencer 221; and Column 8, Lines 30-34), queues (see Fig. 4, CFIFO 217), buffers (see Fig. 3, Buffer Memory 205), and remote copy resources (see Fig. 3, Hard Disk 208; Note, a hard drive is a remote copy resource where as RAM is a local copy resource).

With respect to claim 11, Krakirian '066 teaches the storage system according to Claim 8 further comprising:

a logic (see Fig. 3) that manages resource usage for host adapters that require a specific resource (see Fig. 3, Hard Disk 208).

With respect to claim 12, Krakirian '066 teaches the storage system according to Claim 8 further comprising:

a logic (see Fig. 7A-1) that detects receipt of a command (see Fig. 7A-1, Step with 'Receive Command') from an adapter to a LUN (see Fig. 10B, CLUN index at CFIFO4) that increases consumption of a resource above a preselected limit (see Fig. 7A-1, Step with 'Is Queue Full'; Note, when IDCMD Sequence tests for QFULL and is directed to Step with 'STOP' then that particular command sequence has exceeded the given queue resource), sets a flag indicative of a predefined condition of the resource (see Fig. 7A-1, Step with 'QFULL=1') , allows the received command to complete (see Fig. 7A-2, Step with 'Go to XFR Sequence'), and rejects subsequent commands issued by the adapter to the LUN (see Fig. 7A-1, Step with 'STOP').

With respect to claim 13, Krakirian '066 teaches the storage system according to Claim 8 further comprising:

a logic (see Column 13, Line 16; Note, state machine) that detects an increase consumption (see Column 13, Lines 18-21; Note, two-byte queue instead of a byte queue) of a resource above the preselected limit (Note, one byte queue), and queues

an identifier (Note, tag byte loaded into CFIFO2 of CFIFO 217) of the adapter/LUN combination on a waiting queue (see Fig. 4, CFIFO 217) associated with the resource.

With respect to claim 14, Krakirian '066 teaches the storage system according to Claim 13 further comprising:

a logic (see Fig. 7D) that detects a decline in consumption (see Fig. 7D, Step with 'Send Command Complete Message and go Bus Free') of the resource, removes an adapter/LUN combination identifier from the waiting queue (see Fig. 4, CFIFO 217; Note, the nature of First-In-First-Out queue is to de-queue first queue item first) in the queue order (FIFO), and enables subsequent commands of the adapter/LUN combination removed from the waiting queue (see Column 7, Lines 61-63; Note, when command leaves the CFIFO operation on the Disc is taking place) for operation.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claim 7 is rejected under 35 U.S.C. 103(a) as obvious over Dandrea '864 in view of Krakirian '066.

With respect to claim 7, Dandrea '864 teaches the method according to Claim 1 implemented in a storage system (see Fig. 1, Video Server 110) further comprising:

at least one storage controller (see Fig. 1, Statistical Disk Scheduler 170);

at least one host adapter operational as a client (see Fig.1, Subscribers 160s);

at least one adapter/LUN (see Fig. 1, Subscribers 160s and Disks 120s) combination operational as a client/server combination (see Fig. 1, Subscribers 160s and Video Server 110); and

at least one resource selected from a group consisting of dynamic caching structures (see Fig. 3, Step 380), queues (see Fig. 2, SDS Queues 200s), buffers (see Fig. 2, Disk Queues 125s), and remote copy resources (see Fig. 2, Hard Disks 120s).

Dandrea '864 does not specifically teach the method according to Claim 1 implemented in a storage system further comprising at least one storage array configured as physical storage and logical storage, the logical storage being arranged in logical units (LUNs) operational as servers.

However, Krakirian '066 does teach the method according to Claim 1 implemented in a storage system (see Fig. 3) further comprising at least one storage array (see Fig. 3, Disk Controller 212) configured as physical storage (see Fig. 3, Disk 208) and logical storage (see Fig. 10B, LBA indexes at CFIFO6-8), the logical storage being arranged in logical units (see Fig. 10B, CLUN index at CFIFO4) operational as servers.

Therefore, it would have been obvious to one of ordinary skill in the art at the time of Applicant's invention to modify Dandrea '864's storage system to comprise Krakirian '066's SCSI storage system that utilizes Logical and Physical storage arrangement. One of ordinary skilled in the art would be motivated to do this because SCSI (Note, each device on SCSI Bus is assigned at least one Logical Unit Number and a direct access storage device consists of a number of logical blocks) bus can handle array of hard drives which would increase storage capacity and open options for future upgrades.

Response to Arguments

Applicant's arguments filed on June 1, 2007 have been fully considered but they are moot in view of the new grounds of rejection.

Regarding the 35 U.S.C. §112, second paragraph problems, Applicant's response, amendment, and cancellations has overcome these rejections.

Regarding the 101 rejection under 35 U.S.C. 101, Applicant's response and amendment has overcome these rejections.

Conclusion

The prior arts made of record and not relied upon are considered pertinent to applicant's disclosure:

Row et al. (U.S. Patent Number 5,163,131) discloses parallel I/O network file server architecture;

Chidambaran et al. (U.S. Publication Number 2001/0011296) discloses method and apparatus for providing multiple commands to a server;

Hammer et al. (U.S. Patent Number 5,056,003) discloses distributed data management mechanism; and

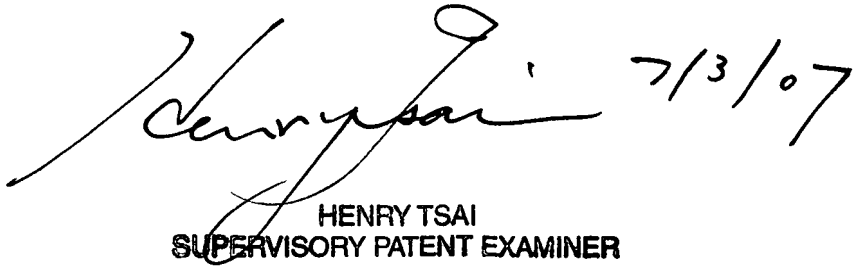
Sugimoto (U.S. Patent Number 5,784,647) discloses interface for fetching highest priority demand from priority queue, predicting completion within time limitation then issuing demand, else adding demand to pending queue or canceling.

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Hyun Nam whose telephone number is (571) 270-1725. The examiner can normally be reached on Monday through Friday 8:30 AM to 5:00 PM EST. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Dr. Henry Tsai can be reached on (571) 272-4176. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

HN



HENRY TSAI
SUPERVISORY PATENT EXAMINER